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ABSTRACT

The present paper discusses some linguistic correlates of early bilingualism, correlates which have implications for first cognitions about language. The paper also touches on the question of what linguistic environments are optimal for the very young child to acquire two languages fluently, testing the importance of a one-speaker/one-language presentation style. The validity of some measures of early bilingual fluency is also discussed. Data from two separate replications are presented. Thirteen bilinguals with mean age of 30 months are compared with matched monolingual controls on age of first word, receptive vocabulary, and general language development. Subsequently, 22 balanced bilinguals (mean age 51 months) are compared with monolingual controls on age of first word, receptive vocabulary, syntactic maturity and verbal fluency. The results suggest that bilingual preschoolers are not delayed in age of first words, may lag slightly in the acquisition of lexical items, but may be superior in ideational fluency. There is no evidence that the bilingual child's languages must be separated by speaker or location for optimum vocabulary growth. (Author/CLK)

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SOME ISSUES IN THE ASSESSMENT OF LINGUISTIC CONSEQUENCES OF EARLY BILINGUALISM

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The present paper discusses some linguistic correlates of early bilingualism, correlates which have implications for first cognitions about language. The paper also touches on the question of what linguistic environments are optimal for the very young child to acquire two languages fluently, testing the importance of a one-speaker/one-language presentation style. The validity of some measures of early bilingual fluency is also discussed. Data from two separate replications are presented. Thirteen bilinguals with mean age of 30 months are compared with matched monolingual controls on age of first word, receptive vocabulary, and general language development. Subsequently 22 balanced bilinguals (mean age 51 months) are compared with monolingual controls on age of first word, receptive vocabulary, syntactic maturity and verbal fluency. The results suggest that bilingual preschoolers are not delayed in age of first words, may lag slightly in the acquisition of lexical items but may be superior in ideational fluency. There is no evidence that a one-speaker/one-language presentation optimizes language development of bilingual children.

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Some Issues in the Assessment of Linguistic Consequences of Early Bilingualism

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The present paper discusses some linguistic correlates of early bilingualism, correlates which have implications for first cognitions about language. The paper also touches on the question of what linguistic environments are optimal for the very young child to acquire two languages fluently. In the process we point out some methodological pitfalls confronting the researcher in this area.

Delayed language milestones are usually predicted for bilingual vs. monolingual children. Taylor (1974) in a discussion of his cognitive network theory has made explicit a mechanism for the predicted delay. He suggests that children exposed to two languages from infancy acquire their first words at the same age as monolinguals. He states that first words are labels linked with concepts by the principles of associative learning. However, he also points out that the bilingual child will have much greater difficulty acquiring the higher order concept, that all concepts have labels. This difficulty arises because the bilingual encounters two labels for most concepts, the occurrence of each label being conditional on other factors such as who is speaking, time of day, location, or merely the other structures of the phrase. Therefore, Taylor predicts that children raised in a bilingual environment will acquire their first few words as quickly as children raised monolingually but that the vocabulary spurt associated with the acquisition of the "label" concept will be delayed. According to Taylor, difficulty of discriminating the conditions under which one label occurs rather than another would also slow the rate of vocabulary growth in the slightly older child. This statement implies that the easier it is to learn the conditions of occurrence of lexical items in the two languages the less delayed vocabulary will be, other things being equal. Therefore we predicted that clear marking of the occurrence of each language would foster vocabulary growth in the bilingual child. Such demarcation is often achieved by the mother speaking one language to the child and the father the other, or by one language being spoken at home, the other at school. Vygotsky (in Cummins, 1976) has also stressed the importance of separate linguistic contexts for optimal cognitive (and presumably language) development in the bilingual child.

Over two years of study these three predictions were examined: that bilinguals would show no delay relative to monolinguals in age of first word but that bilinguals would show some delay in vocabulary growth and

that clear signals as to language being spoken would aid acquisition of the two languages.

Year One: Bilinguals vs. Monolinguals - Age of First Word, Vocabulary

In the first year, 13 bilingual and 13 monolingual children were examined. They ranged in age from 17 to 42 months with a mean age of 30 months. The bilinguals all heard a substantial amount of both French and English in the home but were not necessarily equally fluent in both. Groups were matched in dominant language, age, sex, non-language development status, parental education and parental occupation. Children were visited at home by a pair of examiners, one of which ostensibly spoke only French and the other only English. Among other tests, the Peabody Picture Vocabulary Test (PPVT) was administered, for the bilinguals one part in French and the other in English. The language sector of the Denver Developmental Screening Test (Frankenburg et al, 1970) was also given. Despite the small sample size, there was strong support for Taylor's (1974) predictions. The bilinguals were not delayed in the slightest relative to monolinguals in reported age of first word. The average age of first word as recalled by mother was 11.2 months for the bilinguals compared to 12 months for the monolinguals. The PPVT scores of the bilinguals in their dominant language were, as predicted, significantly lower than the monolinguals. 16 and 24.6 words were recognized by bilinguals and monolinguals respectively, $t(12) = 2.17$, $p < .05$. Denver language scores showed a similar pattern to the Peabody. These findings tentatively support Taylor's predictions concerning the importance for vocabulary growth of the child acquiring the label concept and the bilingual child's relative difficulty in acquiring this prerequisite.

While little reliability information is available on the Denver Developmental Screening Test scored in this way, the PPVT has reported a very adequate alternate form (English) reliability in the age range 2.6 to 6.0 (r's range from .73 to .81). Alternate forms administered to some balanced bilinguals one week apart in our project had reliabilities of .78 in English ($n = 8$) and .72 ($n = 12$) in French.

The validity of these measures of language development might be questioned, in particular the use of the Peabody Picture Vocabulary Test in French as a measure of receptive vocabulary. Non-equivalence of French and English forms could not have biased our results since bilinguals were matched with monolinguals in dominant language; however, it is true that the French PPVT was relatively unstandardized and little researched. It was developed for evaluation of French immersion students in the St. Lambert Experiment (Lambert and Tucker, 1972). In five replications in Grades 1-3 the mean raw score of control anglophones on the English version and francophones on the French version were within 4 points of each other.

In our study several items on the French forms were changed, in particular where the target word was less frequently used by francophones in

Québec than an "anglicism", e.g. "l'éventail" vs. "le fan", or where the target word was identical in French and English, e.g. "ambulance", "meringue". These changes were made to make the French and English forms more equivalent in difficulty and to avoid giving an advantage to bilinguals. In each case a different target word was substituted from the same plate. In addition to the similar mean scores quoted above, data from our own project was felt to justify treating the French and English versions as relatively equivalent. Raw scores of monolinguals on the two versions correlated equally strongly with age, $r = .79$, $p < .01$, for 28 anglophones 34-69 months old, and $r = .86$, $p < .01$, for 24 francophones 33-70 months old.

The validity of maternal report for age of first word could also be questioned. Only three mothers in our sample of 44 possessed written records of this milestone. It could be argued that mothers were responding to a large extent on the basis of their knowledge of the normative age of first word adjusted somewhat for their recollection of whether their child was relatively early or late in talking. However, in the absence of facilities for a large scale, prospective, longitudinal study, we felt maternal report to be the best alternative.

Year One: Language Context and Language Attainment

We tried to assess whether complexity of conditions under which the bilingual children heard the two languages affected rate of vocabulary growth. Parents were asked which language they spoke to the child and how often, and which language they spoke to each other. In the first year of the study, some support was found for the prediction that clear signals as to when one language was to be used would foster language development in the bilingual child. Each of the 13 young bilinguals was classified as hearing his language either in a separate or in a mixed context, that is, context was scored as separate if, for example, mother spoke only French to the child and father only English. Context was scored as mixed when each parent spoke both languages to the child and could not specify time of day or location (home, school) as conditions. Of the eight bilingual children who heard the two languages in a separate context only 3/8 showed the typical deficit in language skill relative to age norms and 4/8 were above their age level in language skill (Denver Developmental Screening Test). Of the five children who heard the two languages in a mixed context 5/5 showed language skill below that expected of monolingual children of the same age. These results do not quite reach the .05 level of significance and PPVT scores showed less striking, but similar trends. However, they suggest that clear indications of when each language is being used may foster language acquisition.

Year Two: Bilinguals vs. Monolinguals - Age of First Word and Vocabulary

Cummins (1976) has pointed out that positive effects of bilingualism may depend on the degree of bilingualism attained, that some threshold level of competence in the second language relative to the first must be reached. We thought that our first year's results may have been due to the fact that we made no attempt to select balanced bilinguals. In the

second year, we reassessed these same three hypotheses with a group of 22 balanced preschool bilinguals selected from among 45 on the basis of a discrepancy of 20 IQ points or less between the French and English forms of the PPVT[2]. The 22 balanced bilinguals (mean age 51 mo., range 36-69 months) were compared with 22 monolinguals matched as in year one. These children were tested in their nursery school, daycare centre or home on the Peabody Picture Vocabulary Test, a verbal fluency task and a syntactic development scale (Reynell, 1969) for the bilinguals one form in French and the other in English. The assessment was conducted by only one person using two hand puppets, one who spoke only French and one who spoke only English.

Again we found no difference in mean age of first word, 11.2 and 11.6 months for the bilinguals and monolinguals respectively. However, we still found significantly lower dominant PPVT scores for the bilinguals, 97 vs. 109, $t(42) = 2.05$, $p < .05$ Thus, contrary to Cummins (1976) even balanced bilinguals had somewhat lower receptive vocabulary scores.

A crude index of syntactic maturity was obtained by rating the complexity of syntactic structures used spontaneously by the child throughout the interview. The Reynell (1969) rating scale ranged from 1 to 6 for our purposes, from "combines two or more words" to "uses complex sentences". On the syntax measure the bilinguals tended to do less well than the monolinguals, with average ratings of 4.13 vs. 4.63 respectively, $F(1,40)=2.74$, $p < .105$. This finding suggests that not only vocabulary but also syntactic rules may be slightly delayed for the bilingual child.

However, on the expressive language measure the bilingual children did significantly better than the monolingual children. For this task, each child was shown four pictures (Reynell, 1969), e.g. of children helping their mother set the table, or of children shopping with parents. The children were asked to talk about each picture and responses were scored in terms of the number of concepts mentioned (up to 4 per picture). A split half reliability of .84 is reported in this age range on the syntax and picture measures together. The mean number of ideas expressed in the dominant language on two stories (maximum equals 8) was 5.31 and 3.90 for the bilinguals and monolinguals respectively, $F(1, 40) = 4.26$, $p < .05$. Thus, whereas bilinguals may lag somewhat behind in vocabulary and syntactic maturity, they show greater verbal fluency than monolinguals. These latter results are consistent with Peal and Lambert (1962) and others who found equal or greater verbal fluency in bilinguals compared to monolinguals.

Year Two: Language Context and Language Skill

In year two, we again examined the hypothesis that separate language contexts would foster and mixed language contexts hinder language acquisition. In our larger sample of 45 bilinguals, parents were interviewed in detail over the phone about the child's language environment, including how much time each week the child spent with parent, peers, or other adults, and what language or languages were spoken in each case.

From these biographies the percentage of time per week that the child was spoken to with language mixing in the home and in total was scored. Mixing in the home ranged from 0-100% with a mean of 52.8%; total mixing ranged from 0-87.9% with a mean of 25.7%. The mean PPVT IQ was 103.8 in the dominant language.

The correlation between vocabulary scores in the dominant language and several variables of interest, namely father's education, mother's education, percent mixing in home, percent mixing total, age and sex, was examined. Because of the possibility that children who heard both languages in a mixed context were dividing their efforts between the two languages we computed another dependent variable, a total language score, by adding IQ scores for French and English. Separate step-wise regression analyses were performed for each dependent variable with the six predictors. The results were very clear: there was no relationship between amount of mixing of input languages and vocabulary attainment. The correlations between the two dependent variables and the independent variables are shown in Table 1. According to the regression analysis the main predictor of vocabulary attainment was mother's education. When the sample was separated into younger (mean 45 mos.) and older (mean 60 months) subjects, or into balanced and non-balanced bilinguals, again no relationship between vocabulary and percent mixing was found in any subgroup. Worthy of note is the association of separate context with higher maternal education on our sample.

While one can never prove the null hypothesis, there was no suggestion in the data that complexity of conditions under which the two languages occur affects ability to learn lexical items. Perhaps the effect of mixing does not persist as late as 45 months of age. However, seven children from the previous years were reassessed and they showed little change in their vocabulary ranking or in their language environment; this finding suggests that the first year trend for mixing was due to chance.

Consistent with our findings, Bain (1976) also failed to find significant effects of linguistic context in an investigation of cognitive skills in bilingual children. He reports only a trend toward superiority of children reared with one language per speaker, and does not report the education levels of parents in separate vs. mixed environments. Given the association in our study between separate context and higher education, Bain's trends may not reflect a cognitive effect of language learning environment but rather the effect of this third factor, parental education. In retrospect, the hypothesis that separate speakers would positively affect bilingual language acquisition at four years of age seems somewhat naive. It is more realistic to assume that the child utilizes phonological differences to distinguish French and English utterances at an early age.

Table 1

Correlation[a] Between Vocabluary Scores and Language Environment: Year Two.

	PPVT dom.	Father Educ.	Mother Educ.	% Mixed home	% Mixed total	Age	Sex
PPVT tot	.776**	.227	.335*	.010	-.132	-.184	.152
PPVT dom.		.322*	.400**	.004	-.075	-.117	-.054
Father Educ.			.447**	.110	-.065	-.073	.055
Mother Educ.				-.275	-.346*	.020	-.034
% Mixed Home					.778**	-.082	.118
% Mixed Total						-.133	.313*
Age							.201

a - Pearson product moment correlation coefficient

* - $p < .05$

**- $p < .01$

Conclusion

Given the failure of the context hypothesis to find support, we might wonder whether Taylor's rationale for the bilingual's relative vocabulary lag may also be erroneous. It is possible that the lower vocabulary of bilingual children may not be due to the difficulty of learning labels whose occurrences are conditional. Rather, bilingual children may simply lack as much variety of linguistic input in their dominant language. In addition, Swain (1972) suggests that when both languages are examined, the total conceptual vocabulary of the bilingual child may exceed that of the monolingual child.

The present data on syntactic maturity also argues against Ben Zeev's thesis (1972) that bilingual children are directing their attention to structural rather than lexical aspects of their languages.

In summary, we have evidence that bilinguals' age of first word is not delayed, that vocabulary in the dominant language is slightly delayed, but that verbal fluency may be enhanced. However, there is yet no evidence that the bilingual child's languages must be separate by speaker or location for optimal vocabulary growth.

Footnotes

An earlier version of this paper was presented at the annual meeting of the Canadian Psychological Association, Toronto, June 1976. This project was supported by a Québec government FCAC grant to the first author.

[1] Mireille Champagne is now at York University.

[2] IQ rather than raw scores were used to control for within group differences in age.

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